

Amrut Sevabhavi Sanstha, Parbhani.  
**Late Ku. Durga K. Banmeru Science College, Lonar Dist-Buldhana.**

# **Department of Electronics**

**Teaching Plan 2017-18**

**Class:-B.Sc. 1<sup>st</sup>Year**  
**Semester:- 1<sup>st</sup>**  
**Paper:- Basic Of Electronics(CBCS)**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<p><b>Passive component and Network Theorems</b></p> <p>Introduction to Resistors, Capacitors, Inductors and Transformers,</p> <p>Concept of ideal dc voltage and current source,</p> <p>KVL, KCL,</p> <p>Thevenin's, Norton's, maximum power transfer, Millman's theorem (statement, proof, simple numerical application for dc only).</p>	04  02  02 07	15
2	Aug-Sept	<b>Unit II</b>	<p><b>Measuring Instruments</b></p> <p>Principles of voltmeter, ammeter, ohmmeter, Multirange DC voltmeter, ohm per volt rating, loading effect, Multirange DC Ammeter, Series &amp; shunt type ohmmeter, Multimeter (uses &amp; drawback). CRO Block diagram &amp; explanation, CRT construction &amp; working, uses of CRO (measurement of frequency , amplitude&amp; phase.)</p>	03  04 04 04	15
3	Sept	<b>Unit III</b>	<p><b>Semiconductor Diode and Regulated power supply:</b></p> <p>Operation and characteristics of PN junction diode, Avalanche and Zener breakdown mechanism, Half wave and full wave rectifiers (ripple factor, efficiency, PIV ratings), C, L and p filters, Concept of unregulated and regulated power supply, Zener diode voltage regulator, Three terminal IC regulator.</p>	04 03 03 02 03	15

**Class:-B.Sc. 1<sup>st</sup>Year**

4	Oct	<b>Unit IV</b>	<b>Bipolar Transistors:</b> NPN and PNP transistor (construction and working) CB, CE & CC configuration, leakage currents, Input and output characteristics of CE mode, relation between $\alpha$ and $\beta$ Load line and operating point, Amplification action of CE amplifier, biasing and stability, Self and fixed bias circuit.	05 03 02 02 04	15
5	Nov.	<b>Unit V</b>	<b>Switching and Optoelectronic devices :</b> Construction, working and characteristics of FET, MOSFET, UJT, SCR, relation of FET parameters, Construction, working & characteristics of LDR, LED, photodiode, photovoltaic cell( Solar cell).	08 02 05	15
6	Dec.	<b>Unit VI</b>	<b>Integrated Circuits:</b> Introduction to IC technology, advantages and disadvantages, Classification of ICs, Basic steps in fabrication of monolithic ICs, Fabrication of diode, resistor & transistor. Scale of integration upto V2LSI', Basic concept of Embedded systems.	03 02 02 03 02 03	15

Head of Department

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

**Paper:- Digital Electronics(CBCS)**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Binary Arithmetic &amp; Logic gates :</b> Binary, Octal & Hexadecimal number system and their interconversion, Binary arithmetic (addition and subtraction using 1's & 2's compliment), multiplication & division. Binary codes : 8421 BCD, Excess-3 & Gray code. NOT, OR, AND, NAND, NOR gates (definition and truth table). EXNOR & EXOR gates, Half adder, full adder, 4 bit binary full adder.	07 01 05 02	15
2	Feb- Mar	<b>Unit II</b>	<b>Boolean Algebra &amp; Logic families:</b> Boolean laws, De-morgans theorem, Simplification of Boolean equations using Boolean algebra, Fundamental products & sum terms, K-map (K-map upto 4 variable). Classification of logic families, characteristics (Fan-in, Fanout, Noise immunity, Propagation delay, Power dissipation), DTL, TTL & CMOS logic.	02 07 03 03	15
3	Mar	<b>Unit III</b>	<b>Multivibrators and Flip Flops:</b> Construction & working of Astable, monostable and Bistable transistorised multivibrators, RS, CK-RS, D, JK, JKMS and T Flip Flops (Logic diagram, Truth table, construction & working), Concept of edge trigger Flip-Flop, Concept of preset & clear terminal.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Counters and Shift registers:</b> Asynchronous & synchronous Counter, Up-down counters (up to 4-bits), modified asynchronous counter (Mod -7 ,Mod10,and Mod-13). Types of shift registers, SISO, SIPO, PISO & PIPO, IC version of Mod -10 shift registers (Construction & working), IC version of shift register – 7495, Application of shift register. Ring counter, Johnson's counter.	04 03 04 04	15

**Class:-B.Sc. 1<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

5	Apr- May	<b>Unit V</b>	<b>Combinational logic circuit:</b> Encoder: Binary to BCD, Decimal to BCD, IC 74147, Decoder: 2 to 4 line, BCD to decimal, BCD to 7 segment, IC 7447, Multiplexer: 4X1, 8X1, De multiplexer: 1X4, 1X8, (Definition, construction, operation and application of above)	05 02 03 05	15
6	Apr- May	<b>Unit VI</b>	<b>Semiconductor Memories:</b> Concept of memory, primary and secondary memory, classification of memories, volatile and non volatile memories, memory Hierarchy, semiconductor memory: RAM, ROM, PROM, EPROM, EEPROM, flash memory.	04 02 02	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**  
**Semester:- III<sup>rd</sup>**  
**Paper:- Electronics Devices and Circuits**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	Unit I	<b>Hybrid-parameters &amp; Cascaded amplifiers:</b> Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers, Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,	07 02 06	15
2	Aug-Sept	Unit II	<b>Power Amplifier:</b> Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.	05 05 05	15
3	Sept	Unit III	<b>Feedback amplifiers and Oscillators:</b> Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only), concept of oscillator,basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator	03 03 02 07	15
4	Oct	Unit IV	<b>Operational amplifier and applications:</b> Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp output impedance, Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.	01 03 1 1	15

5	Nov.	<b>Unit V</b>	<b>Advance applications of Op- Amp:</b> Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).	04 04 07	15
6	Nov- Dec	<b>Unit VI</b>	<b>A/D and D/A converter:</b> Need of A/D and D/A converter. D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification. A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter	02 04 02 07	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester- IV<sup>th</sup>**

**B.Sc. II<sup>nd</sup> Year**

**Paper:- Communication Electronics and Microprocessor 8085**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Modulation and Demodulation:</b> Need for modulation, AM theory, Power relation, Theory of FM , Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector. Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.	03 03 03 02 04	15
2	Feb- Mar	<b>Unit II</b>	<b>Fiber Optic Communication :</b> Introduction ,advantages of OFC , Types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor . Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.	02 03 04 03 03	15
3	Mar	<b>Unit III</b>	<b>Pulse Modulation and Digital Communication:</b> Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise ) , Application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .	08 07	15
4	Mar- Apr	<b>Unit IV</b>	<b>Architecture and timings of 8085:</b> Evolution of microprocessor, microcomputer (Block diagram with function of each block), architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.	03 07 05	15
5	Apr- May	<b>Unit V</b>	<b>Instruction and programming of 8085:</b> Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair). Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.	04 02 02 07	15



**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-V<sup>th</sup>**  
**Paper:-Measuring Instruments**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<b>Basic Instrumentation:</b> Block diagram of generalized instrumentation system, Concept of transducers (Primary and secondary, active and passive, analog and digital). Resistive transducer potentiometer, Inductive transducer - LVDT, capacitive transducer (by changing distance), measurement of displacement using capacitive transducer (By changing dielectric).	05 05 05	15
2	Aug-Sept	<b>Unit II</b>	<b>Measurement of Temperature:</b> Thermocouple, Thermopile, Thermister, RTD, Total Radiation Pyrometer, IC DS 1621 ,IC LM34 , IC LM35 , Infrared Pyrometer,	06 03 04 02	15
3	Sept	<b>Unit III</b>	<b>Timer and PLL: IC 555 timer:</b> Block diagram and function of each block, application of 555 timer as astable, bistable and monostable multivibrator (construction, working and expression for time period). PLL Block diagram and function of each block, concept of capture range, pull in time, lock in range, electrical characteristics, applications of PLL as FM demodulator, AM detector and frequency synthesizer	07 04 04	15
4	Oct	<b>Unit IV</b>	<b>Display, digital Instrument and recorder:</b> Seven segment, 14 segment, dot matrix, 16x2 LCD display, advantage and disadvantage, Digital instrument: Digital frequency meter, Digital voltmeter (Ramp type), Digital capacitance meter (Block diagram and function of each block) . Recorder: Classification, necessity of recorder, XY recorder, magnetic tape recorder.	03 07 05	15
5	Nov.	<b>Unit V</b>	<b>Sensors and Actuators:</b> Sensors: Definition, Methods of fabrication of Sensors, Types of sensors (Mechanical, Thermal, Optical, magnetic, chemical) Actuators: Definition, Working principles of Electromechanical, Electro thermal, Electro-optical and Electrochemical Actuators.	08 07	15

6	Nov.	<b>Unit VI</b>	<b>Biomedical electronics:</b> Introduction, Type of electrode, EEG, EMG, ECG- block diagram and function of each block, X ray machine, instantaneous heart rate meter- systolic and diastolic blood pressure meter, EAR oximeter, pulse Oximeter, range gated pulse Doppler blood flow meter, Laser Doppler blood flow meter.	06 03 07	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-VI<sup>th</sup>**  
**Paper:- Advanced Microprocessor and Microprocessor**

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>8086 Architecture:</b> Block diagram of 8086 microprocessor, BIU and EU, operating modes of 8086, register of 8086-G.P.R,pointer and index register, segment register, concept of segmented memory, instruction pointer, status flag, pin diagram of 8086 microprocessor, physical and effective address.	07 08	15
2	Feb- Mar	<b>Unit II</b>	<b>Instructions and programming of 8086 Instructions:</b> MOV, PUSH, POP, LEA, LDS, LES, Arithmetic & Logic Instructions. Addressing mode, 8086 instruction, Bus cycle, Programming: programs of data transfer, addition, subtraction, division, multiplication using various addressing mode.	04 03 08	15
3	Mar	<b>Unit III</b>	<b>8051 Microcontroller Architecture :</b> Microcontroller Introduction, Difference between Microprocessor and Microcontroller, block diagram of microcontroller, CPU, registers, flags, PSW, PC, Data Pointer, SFR, SP, Internal RAM/ROM, External memory, I/O ports, counter & timers, interrupts.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Instruction set of 8051 and Programming:</b> Addressing mode, Instruction set: Data transfer, arithmetic, logical operation, JUMP, Loop and CALL instructions. Assembly language programming examples: simple data transfer, arithmetic, logical and single bit.	08 07	15
5	Apr- May	<b>Unit V</b>	<b>8051 Interfacing &amp; Application:</b> Basics of serial communication, interfacing with RS-232C, SCON and PCON registers, interfacing a DAC / ADC and waveform generation, interfacing to the 8255, interfacing LED, power reduction mode.	05 05 05	15

## Semester-VI<sup>th</sup>

### Paper:- Advanced Microprocessor and Microprocessor

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
6	May	Unit. VI	<b>Advance microcontroller:</b> Introduction to AVR, Arithmetic and logic Unit, program and data memories, downloadable flash program memory, SRAM data memory, general purpose register file, I/O register, EEPROM data memory, peripherals, Timers/ Counters.	04 02 05 04	15

Head of Department

Amrut Sevabhavi Sanstha, Parbhani.  
**Late Ku. Durga K. Banmeru Science College, Lonar Dist-Buldhana.**

# **Department of Electronics**

**Teaching Plan 2018-19**

**Class:-B.Sc. I<sup>st</sup>Year**  
**Semester:- I<sup>st</sup>**  
**Paper:- Basic Of Electronics(CBCS)**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<p><b>Passive component and Network Theorems</b></p> <p>Introduction to Resistors, Capacitors, Inductors and Transformers,</p> <p>Concept of ideal dc voltage and current source,</p> <p>KVL, KCL,</p> <p>Thevenin's, Norton's, maximum power transfer, Millman's theorem (statement, proof, simple numerical application for dc only).</p>	03  03  02 07	15
2	Aug-Sept	<b>Unit II</b>	<p><b>Measuring Instruments</b></p> <p>Principles of voltmeter, ammeter, ohmmeter, Multirange DC voltmeter, ohm per volt rating, loading effect, Multirange DC Ammeter, Series &amp; shunt type ohmmeter, Multimeter (uses &amp; drawback). CRO Block diagram &amp; explanation, CRT construction &amp; working, uses of CRO (measurement of frequency , amplitude&amp; phase.)</p>	04  03 04  04	15
3	Sept	<b>Unit III</b>	<p><b>Semiconductor Diode and Regulated power supply:</b></p> <p>Operation and characteristics of PN junction diode, Avalanche and Zener breakdown mechanism, Half wave and full wave rectifiers (ripple factor, efficiency, PIV ratings), C, L and p filters, Concept of unregulated and regulated power supply, Zener diode voltage regulator, Three terminal IC regulator.</p>	04  03  02 03 03	15

**Class:-B.Sc. I<sup>st</sup>Year**

4	Oct	<b>Unit IV</b>	<b>Bipolar Transistors:</b> NPN and PNP transistor (construction and working) CB, CE & CC configuration, leakage currents, Input and output characteristics of CE mode, relation between $\alpha$ and $\beta$ Load line and operating point, Amplification action of CE amplifier, biasing and stability, Self and fixed bias circuit.	04 04 02 02 04	15
5	Nov.	<b>Unit V</b>	<b>Switching and Optoelectronic devices :</b> Construction, working and characteristics of FET, MOSFET, UJT, SCR, relation of FET parameters, Construction, working & characteristics of LDR, LED, photodiode, photovoltaic cell( Solar cell).	08 02 05	15
6	Dec.	<b>Unit VI</b>	<b>Integrated Circuits:</b> Introduction to IC technology, advantages and disadvantages, Classification of ICs, Basic steps in fabrication of monolithic ICs, Fabrication of diode, resistor & transistor. Scale of integration upto V2LSI', Basic concept of Embedded systems.	03 02 02 03 02 03	15

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

**Paper:- Digital Electronics(CBCS)**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Binary Arithmetic &amp; Logic gates :</b> Binary, Octal & Hexadecimal number system and their interconversion, Binary arithmetic (addition and subtraction using 1's & 2's compliment), multiplication & division. Binary codes : 8421 BCD, Excess-3 & Gray code. NOT, OR, AND, NAND, NOR gates (definition and truth table). EXNOR & EXOR gates, Half adder, full adder, 4 bit binary full adder.	06 02 05 02	15
2	Feb- Mar	<b>Unit II</b>	<b>Boolean Algebra &amp; Logic families:</b> Boolean laws, De-morgans theorem, Simplification of Boolean equations using Boolean algebra, Fundamental products & sum terms, K-map (K-map upto 4 variable). Classification of logic families, characteristics (Fan-in, Fanout, Noise immunity, Propagation delay, Power dissipation), DTL, TTL & CMOS logic.	03 06 03 03	15
3	Mar	<b>Unit III</b>	<b>Multivibrators and Flip Flops:</b> Construction & working of Astable, monostable and Bistable transistorised multivibrators, RS, CK-RS, D, JK, JKMS and T Flip Flops (Logic diagram, Truth table, construction & working), Concept of edge trigger Flip-Flop, Concept of preset & clear terminal.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Counters and Shift registers:</b> Asynchronous & synchronous Counter, Up-down counters (up to 4-bits), modified asynchronous counter (Mod -7 ,Mod10, and Mod-13). Types of shift registers, SISO, SIPO, PISO & PIPO, IC version of Mod -10 shift registers (Construction & working), IC version of shift register – 7495, Application of shift register. Ring counter, Johnson's counter.	03 04 04 04	15

**Class:-B.Sc. I<sup>st</sup>Year****Semester:- II<sup>nd</sup>**

5	Apr- May	<b>Unit V</b>	<b>Combinational logic circuit:</b> Encoder: Binary to BCD, Decimal to BCD, IC 74147, Decoder: 2 to 4 line, BCD to decimal, BCD to 7 segment, IC 7447, Multiplexer: 4X1, 8X1, De multiplexer: 1X4, 1X8, (Definition, construction, operation and application of above)	05 02 02 06	15
6	Apr- May	<b>Unit VI</b>	<b>Semiconductor Memories:</b> Concept of memory, primary and secondary memory, classification of memories, volatile and non volatile memories, memory Hierarchy, semiconductor memory: RAM, ROM, PROM, EPROM, EEPROM, flash memory.	04 02 02	15

**Class:-B.Sc. II<sup>nd</sup> Year**  
**Semester:- III<sup>rd</sup>**  
**Paper:- Electronics Devices and Circuits**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	Unit. I	<b>Hybrid-parameters &amp; Cascaded amplifiers:</b> Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers, Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,	06 03 06	15
2	Aug-Sept	Unit II	<b>Power Amplifier:</b> Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.	05 05 05	15
3	Sept	Unit III	<b>Feedback amplifiers and Oscillators:</b> Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only), concept of oscillator,basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator	04 02 02 07	15
4	Oct	Unit IV	<b>Operational amplifier and applications:</b> Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp output impedance, Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.	02 03 10	15

5	Nov.	<b>Unit V</b>	<b>Advance applications of Op- Amp:</b> Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).	04 05 06	15
6	Nov- Dec	<b>Unit VI</b>	<b>A/D and D/A converter:</b> Need of A/D and D/A converter. D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification. A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter	02 04 02 07	15

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester- IV<sup>th</sup>**

**B.Sc. II<sup>nd</sup> Year**

**Paper:- Communication Electronics and Microprocessor 8085**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Modulation and Demodulation:</b> Need for modulation, AM theory, Power relation, Theory of FM , Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector. Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.	03 03 03 02 04	15
2	Feb- Mar	<b>Unit II</b>	<b>Fiber Optic Communication :</b> Introduction ,advantages of OFC , Types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor . Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.	02 03 04 03 03	15
3	Mar	<b>Unit III</b>	<b>Pulse Modulation and Digital Communication:</b> Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise ) , Application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .	08 07	15
4	Mar- Apr	<b>Unit IV</b>	<b>Architecture and timings of 8085:</b> Evolution of microprocessor, microcomputer (Block diagram with function of each block), architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.	03 07 05	15
5	Apr- May	<b>Unit V</b>	<b>Instruction and programming of 8085:</b> Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair). Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.	04 02 02 07	15

Class:-B.Sc. II<sup>nd</sup> Year

Semester:- IV

Paper: :- Communication Electronics and Microprocessor 8085

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
6	May	Unit. VI	<b>Interfacing:</b> Basic interfacing concept, memory mapped I/O and I/O mapped I/O Schemes, data transfer schemes. 8255PPI: block diagram, function of each block, Functional pin diagram, , function of each pin, operating modes of 8255PPI, control word format in I/O and BSR mode, illustrative example.	02    03       10	15

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-V<sup>th</sup>**  
**Paper:-Measuring Instruments**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<b>Basic Instrumentation:</b> Block diagram of generalized instrumentation system, Concept of transducers (Primary and secondary, active and passive, analog and digital). Resistive transducer potentiometer, Inductive transducer - LVDT, capacitive transducer (by changing distance), measurement of displacement using capacitive transducer (By changing dielectric).	05 05 05	15
2	Aug-Sept	<b>Unit II</b>	<b>Measurement of Temperature:</b> Thermocouple, Thermopile, Thermister, RTD, Total Radiation Pyrometer, IC DS 1621 ,IC LM34 , IC LM35 , Infrared Pyrometer,	06 03 04 02	15
3	Sept	<b>Unit III</b>	<b>Timer and PLL: IC 555 timer:</b> Block diagram and function of each block, application of 555 timer as astable, bistable and monostable multivibrator (construction, working and expression for time period). PLL Block diagram and function of each block, concept of capture range, pull in time, lock in range, electrical characteristics, applications of PLL as FM demodulator, AM detector and frequency synthesizer	07 04 04	15
4	Oct	<b>Unit IV</b>	<b>Display, digital Instrument and recorder:</b> Seven segment, 14 segment, dot matrix, 16x2 LCD display, advantage and disadvantage, Digital instrument: Digital frequency meter, Digital voltmeter (Ramp type), Digital capacitance meter (Block diagram and function of each block) . Recorder: Classification, necessity of recorder, XY recorder, magnetic tape recorder.	03 07 05	15
5	Nov.	<b>Unit V</b>	<b>Sensors and Actuators:</b> Sensors: Definition, Methods of fabrication of Sensors, Types of sensors (Mechanical, Thermal, Optical, magnetic, chemical) Actuators: Definition, Working principles of Electromechanical, Electro thermal, Electro-optical and Electrochemical Actuators.	08 07	15

6	Nov.	<b>Unit VI</b>	<b>Biomedical electronics:</b> Introduction, Type of electrode, EEG, EMG, ECG- block diagram and function of each block, X ray machine, instantaneous heart rate meter- systolic and diastolic blood pressure meter, EAR oximeter, pulse Oximeter, range gated pulse Doppler blood flow meter, Laser Doppler blood flow meter.	06 03 07	15

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-VI<sup>th</sup>**  
**Paper:- Advanced Microprocessor and Microprocessor**

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>8086 Architecture:</b> Block diagram of 8086 microprocessor, BIU and EU, operating modes of 8086, register of 8086-G.P.R,pointer and index register, segment register, concept of segmented memory, instruction pointer, status flag, pin diagram of 8086 microprocessor, physical and effective address.	07 08	15
2	Feb- Mar	<b>Unit II</b>	<b>Instructions and programming of 8086 Instructions:</b> MOV, PUSH, POP, LEA, LDS, LES, Arithmetic & Logic Instructions. Addressing mode, 8086 instruction, Bus cycle, Programming: programs of data transfer, addition, subtraction, division, multiplication using various addressing mode.	04 03 08	15
3	Mar	<b>Unit III</b>	<b>8051 Microcontroller Architecture :</b> Microcontroller Introduction, Difference between Microprocessor and Microcontroller, block diagram of microcontroller, CPU, registers, flags, PSW, PC, Data Pointer, SFR, SP, Internal RAM/ROM, External memory, I/O ports, counter & timers, interrupts.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Instruction set of 8051 and Programming:</b> Addressing mode, Instruction set: Data transfer, arithmetic, logical operation, JUMP, Loop and CALL instructions. Assembly language programming examples: simple data transfer, arithmetic, logical and single bit.	08 07	15
5	Apr- May	<b>Unit V</b>	<b>8051 Interfacing &amp; Application:</b> Basics of serial communication, interfacing with RS-232C, SCON and PCON registers, interfacing a DAC / ADC and waveform generation, interfacing to the 8255, interfacing LED, power reduction mode.	05 05 05	15

**Class:-B.Sc. III<sup>rd</sup> Year**

**Semester-VI<sup>th</sup>**

**Paper:- Advanced Microprocessor and Microprocessor**

<b>Sr. No.</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Advance microcontroller:</b> Introduction to AVR, Arithmetic and logic Unit, program and data memories, downloadable flash program memory, SRAM data memory, general purpose register file, I/O register, EEPROM data memory, peripherals, Timers/ Counters.	04 02 05 04	15

Amrut Sevabhavi Sanstha, Parbhani.  
**Late Ku. Durga K. Banmeru Science College, Lonar Dist-Buldhana.**

# **Department of Electronics**

**Teaching Plan 2019-20**

**Class:-B.Sc. I<sup>st</sup>Year**  
**Semester:- I<sup>st</sup>**  
**Paper:- Basic Of Electronics(CBCS)**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<p><b>Passive component and Network Theorems</b></p> <p>Introduction to Resistors, Capacitors, Inductors and Transformers,</p> <p>Concept of ideal dc voltage and current source,</p> <p>KVL, KCL,</p> <p>Thevenin's, Norton's, maximum power transfer, Millman's theorem (statement, proof, simple numerical application for dc only).</p>	04  02  02 07	15
2	Aug-Sept	<b>Unit II</b>	<p><b>Measuring Instruments</b></p> <p>Principles of voltmeter, ammeter, ohmmeter, Multirange DC voltmeter, ohm per volt rating, loading effect, Multirange DC Ammeter, Series &amp; shunt type ohmmeter, Multimeter (uses &amp; drawback). CRO Block diagram &amp; explanation, CRT construction &amp; working, uses of CRO (measurement of frequency , amplitude&amp; phase.)</p>	03  03 04 05	15
3	Sept	<b>Unit III</b>	<p><b>Semiconductor Diode and Regulated power supply:</b></p> <p>Operation and characteristics of PN junction diode, Avalanche and Zener breakdown mechanism, Half wave and full wave rectifiers (ripple factor, efficiency, PIV ratings), C, L and p filters, Concept of unregulated and regulated power supply, Zener diode voltage regulator, Three terminal IC regulator.</p>	04 03 03 02 03	15

**Class:-B.Sc. I<sup>st</sup>Year**

4	Oct	<b>Unit IV</b>	<b>Bipolar Transistors:</b> NPN and PNP transistor (construction and working) CB, CE & CC configuration, leakage currents, Input and output characteristics of CE mode, relation between $\alpha$ and $\beta$ Load line and operating point, Amplification action of CE amplifier, biasing and stability, Self and fixed bias circuit.	05 03 02 02 04	15
5	Nov.	<b>Unit V</b>	<b>Switching and Optoelectronic devices :</b> Construction, working and characteristics of FET, MOSFET, UJT, SCR, relation of FET parameters, Construction, working & characteristics of LDR, LED, photodiode, photovoltaic cell( Solar cell).	07 03 05	15
6	Dec.	<b>Unit VI</b>	<b>Integrated Circuits:</b> Introduction to IC technology, advantages and disadvantages, Classification of ICs, Basic steps in fabrication of monolithic ICs, Fabrication of diode, resistor & transistor. Scale of integration upto V2LSI', Basic concept of Embedded systems.	03 02 02 03 02 03	15

Head of Department

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

**Paper:- Digital Electronics(CBCS)**

<b>Sr. No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Binary Arithmetic &amp; Logic gates :</b> Binary, Octal & Hexadecimal number system and their interconversion, Binary arithmetic (addition and subtraction using 1's & 2's compliment), multiplication & division. Binary codes : 8421 BCD, Excess-3 & Gray code. NOT, OR, AND, NAND, NOR gates (definition and truth table). EXNOR & EXOR gates, Half adder, full adder, 4 bit binary full adder.	07 01 05 02	15
2	Feb- Mar	<b>Unit II</b>	<b>Boolean Algebra &amp; Logic families:</b> Boolean laws, De-morgans theorem, Simplification of Boolean equations using Boolean algebra, Fundamental products & sum terms, K-map (K-map upto 4 variable). Classification of logic families, characteristics (Fan-in, Fanout, Noise immunity, Propagation delay, Power dissipation), DTL, TTL & CMOS logic.	03 06 03 03	15
3	Mar	<b>Unit III</b>	<b>Multivibrators and Flip Flops:</b> Construction & working of Astable, monostable and Bistable transistorised multivibrators, RS, CK-RS, D, JK, JKMS and T Flip Flops (Logic diagram, Truth table, construction & working), Concept of edge trigger Flip-Flop, Concept of preset & clear terminal.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Counters and Shift registers:</b> Asynchronous & synchronous Counter, Up-down counters (up to 4-bits), modified asynchronous counter (Mod -7 ,Mod10, and Mod-13). Types of shift registers, SISO, SIPO, PISO & PIPO, IC version of Mod -10 shift registers (Construction & working), IC version of shift register – 7495, Application of shift register. Ring counter, Johnson's counter.	03 04 04 04	15

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

5	Apr- May	<b>Unit V</b>	<b>Combinational logic circuit:</b> Encoder: Binary to BCD, Decimal to BCD, IC 74147, Decoder: 2 to 4 line, BCD to decimal, BCD to 7 segment, IC 7447, Multiplexer: 4X1, 8X1, De multiplexer: 1X4, 1X8, (Definition, construction, operation and application of above)	05 03 02 05	15
6	Apr- May	<b>Unit VI</b>	<b>Semiconductor Memories:</b> Concept of memory, primary and secondary memory, classification of memories, volatile and non volatile memories, memory Hierarchy, semiconductor memory: RAM, ROM, PROM, EPROM, EEPROM, flash memory.	04 02 02	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**  
**Semester:- III<sup>rd</sup>**  
**Paper:- Electronics Devices and Circuits**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	Unit. I	<b>Hybrid-parameters &amp; Cascaded amplifiers:</b> Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers, Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,	07 02 06	15
2	Aug-Sept	Unit II	<b>Power Amplifier:</b> Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.	05 05 05	15
3	Sept	Unit III	<b>Feedback amplifiers and Oscillators:</b> Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only), concept of oscillator,basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator	03 03 03 06	15
4	Oct	Unit IV	<b>Operational amplifier and applications:</b> Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp output impedance, Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.	01 03 11	15

5	Nov.	<b>Unit V</b>	<b>Advance applications of Op- Amp:</b> Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).	04 04 07	15
6	Nov- Dec	<b>Unit VI</b>	<b>A/D and D/A converter:</b> Need of A/D and D/A converter. D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification. A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter	02 03 03 07	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester- IV<sup>th</sup>**

**B.Sc. II<sup>nd</sup> Year**

**Paper:- Communication Electronics and Microprocessor 8085**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>Modulation and Demodulation:</b> Need for modulation, AM theory, Power relation, Theory of FM , Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector. Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.	03 03 03 02 04	15
2	Feb- Mar	<b>Unit II</b>	<b>Fiber Optic Communication :</b> Introduction ,advantages of OFC , Types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor . Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.	02 03 04 03 03	15
3	Mar	<b>Unit III</b>	<b>Pulse Modulation and Digital Communication:</b> Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise ) , Application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .	08 07	15
4	Mar- Apr	<b>Unit IV</b>	<b>Architecture and timings of 8085:</b> Evolution of microprocessor, microcomputer (Block diagram with function of each block), architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.	04 06 05	15
5	Apr- May	<b>Unit V</b>	<b>Instruction and programming of 8085:</b> Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair). Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.	04 02 02 07	15



**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-V<sup>th</sup>**  
**Paper:-Measuring Instruments**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<b>Basic Instrumentation:</b> Block diagram of generalized instrumentation system, Concept of transducers (Primary and secondary, active and passive, analog and digital). Resistive transducer potentiometer, Inductive transducer - LVDT, capacitive transducer (by changing distance), measurement of displacement using capacitive transducer (By changing dielectric).	05 05 05	15
2	Aug-Sept	<b>Unit II</b>	<b>Measurement of Temperature:</b> Thermocouple, Thermopile, Thermister, RTD, Total Radiation Pyrometer, IC DS 1621 ,IC LM34 , IC LM35 , Infrared Pyrometer,	06 03 04 02	15
3	Sept	<b>Unit III</b>	<b>Timer and PLL: IC 555 timer:</b> Block diagram and function of each block, application of 555 timer as astable, bistable and monostable multivibrator (construction, working and expression for time period). PLL Block diagram and function of each block, concept of capture range, pull in time, lock in range, electrical characteristics, applications of PLL as FM demodulator, AM detector and frequency synthesizer	07 04 04	15
4	Oct	<b>Unit IV</b>	<b>Display, digital Instrument and recorder:</b> Seven segment, 14 segment, dot matrix, 16x2 LCD display, advantage and disadvantage, Digital instrument: Digital frequency meter, Digital voltmeter (Ramp type), Digital capacitance meter (Block diagram and function of each block) . Recorder: Classification, necessity of recorder, XY recorder, magnetic tape recorder.	03 07 05	15
5	Nov.	<b>Unit V</b>	<b>Sensors and Actuators:</b> Sensors: Definition, Methods of fabrication of Sensors, Types of sensors (Mechanical, Thermal, Optical, magnetic, chemical) Actuators: Definition, Working principles of Electromechanical, Electro thermal, Electro-optical and Electrochemical Actuators.	08 07	15

6	Nov.	<b>Unit VI</b>	<b>Biomedical electronics:</b> Introduction, Type of electrode, EEG, EMG, ECG- block diagram and function of each block, X ray machine, instantaneous heart rate meter- systolic and diastolic blood pressure meter, EAR oximeter, pulse Oximeter, range gated pulse Doppler blood flow meter, Laser Doppler blood flow meter.	06 03 07	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-VI<sup>th</sup>**  
**Paper:- Advanced Microprocessor and Microprocessor**

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>8086 Architecture:</b> Block diagram of 8086 microprocessor, BIU and EU, operating modes of 8086, register of 8086-G.P.R,pointer and index register, segment register, concept of segmented memory, instruction pointer, status flag, pin diagram of 8086 microprocessor, physical and effective address.	07 08	15
2	Feb- Mar	<b>Unit II</b>	<b>Instructions and programming of 8086 Instructions:</b> MOV, PUSH, POP, LEA, LDS, LES, Arithmetic & Logic Instructions. Addressing mode, 8086 instruction, Bus cycle, Programming: programs of data transfer, addition, subtraction, division, multiplication using various addressing mode.	04 04 07	15
3	Mar	<b>Unit III</b>	<b>8051 Microcontroller Architecture :</b> Microcontroller Introduction, Difference between Microprocessor and Microcontroller, block diagram of microcontroller, CPU, registers, flags, PSW, PC, Data Pointer, SFR, SP, Internal RAM/ROM, External memory, I/O ports, counter & timers, interrupts.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Instruction set of 8051 and Programming:</b> Addressing mode, Instruction set: Data transfer, arithmetic, logical operation, JUMP, Loop and CALL instructions. Assembly language programming examples: simple data transfer, arithmetic, logical and single bit.	07 08	15
5	Apr- May	<b>Unit V</b>	<b>8051 Interfacing &amp; Application:</b> Basics of serial communication, interfacing with RS-232C, SCON and PCON registers, interfacing a DAC / ADC and waveform generation, interfacing to the 8255, interfacing LED, power reduction mode.	05 05 05	15

**Class:-B.Sc. III<sup>rd</sup> Year**

**Semester-VI<sup>th</sup>**

**Paper:- Advanced Microprocessor and Microprocessor**

<b>Sr. No.</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Advance microcontroller:</b> Introduction to AVR, Arithmetic and logic Unit, program and data memories, downloadable flash program memory, SRAM data memory, general purpose register file, I/O register, EEPROM data memory, peripherals, Timers/ Counters.	04 02 04 05	15

Head of Department

Amrut Sevabhavi Sanstha, Parbhani.  
**Late Ku. Durga K. Banmeru Science College, Lonar Dist-Buldhana.**

# **Department of Electronics**

**Teaching Plan 2020-21**

**Class:-B.Sc. I<sup>st</sup>Year**  
**Semester:- I<sup>st</sup>**  
**Paper:- Basic Of Electronics(CBCS)**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<p><b>Passive component and Network Theorems</b></p> <p>Introduction to Resistors, Capacitors, Inductors and Transformers,</p> <p>Concept of ideal dc voltage and current source,</p> <p>KVL, KCL,</p> <p>Thevenin's, Norton's, maximum power transfer, Millman's theorem (statement, proof, simple numerical application for dc only).</p>	04  02  02 07	15
2	Aug-Sept	<b>Unit II</b>	<p><b>Measuring Instruments</b></p> <p>Principles of voltmeter, ammeter, ohmmeter, Multirange DC voltmeter, ohm per volt rating, loading effect, Multirange DC Ammeter, Series &amp; shunt type ohmmeter, Multimeter (uses &amp; drawback).            CRO Block diagram &amp; explanation, CRT construction &amp; working, uses of CRO (measurement of frequency , amplitude &amp; phase.)</p>	03  04 04 04	15
3	Sept	<b>Unit III</b>	<p><b>Semiconductor Diode and Regulated power supply:</b></p> <p>Operation and characteristics of PN junction diode, Avalanche and Zener breakdown mechanism, Half wave and full wave rectifiers (ripple factor, efficiency, PIV ratings),            C, L and p filters,            Concept of unregulated and regulated power supply,            Zener diode voltage regulator,            Three terminal IC regulator.</p>	04 03 03 02 03	15

**Class:-B.Sc. I<sup>st</sup>Year**

4	Oct	<b>Unit IV</b>	<b>Bipolar Transistors:</b> NPN and PNP transistor (construction and working) CB, CE & CC configuration, leakage currents, Input and output characteristics of CE mode, relation between $\alpha$ and $\beta$ Load line and operating point, Amplification action of CE amplifier, biasing and stability, Self and fixed bias circuit.	03 03 02 02 05	15
5	Nov.	<b>Unit V</b>	<b>Switching and Optoelectronic devices :</b> Construction, working and characteristics of FET, MOSFET, UJT, SCR, relation of FET parameters, Construction, working & characteristics of LDR, LED, photodiode, photovoltaic cell( Solar cell).	08 02 05	15
6	Dec.	<b>Unit VI</b>	<b>Integrated Circuits:</b> Introduction to IC technology, advantages and disadvantages, Classification of ICs, Basic steps in fabrication of monolithic ICs, Fabrication of diode, resistor & transistor. Scale of integration upto V2LSI', Basic concept of Embedded systems.	02 02 03 03 02 03	15

Head of Department

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

**Paper:- Digital Electronics(CBCS)**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Binary Arithmetic &amp; Logic gates :</b> Binary, Octal & Hexadecimal number system and their interconversion, Binary arithmetic (addition and subtraction using 1's & 2's compliment), multiplication & division. Binary codes : 8421 BCD, Excess-3 & Gray code. NOT, OR, AND, NAND, NOR gates (definition and truth table). EXNOR & EXOR gates, Half adder, full adder, 4 bit binary full adder.	07 01 05 02	15
2	Feb- Mar	<b>Unit II</b>	<b>Boolean Algebra &amp; Logic families:</b> Boolean laws, De-morgans theorem, Simplification of Boolean equations using Boolean algebra, Fundamental products & sum terms, K-map (K-map upto 4 variable). Classification of logic families, characteristics (Fan-in, Fanout, Noise immunity, Propagation delay, Power dissipation), DTL, TTL & CMOS logic.	02 07 03 03	15
3	Mar	<b>Unit III</b>	<b>Multivibrators and Flip Flops:</b> Construction & working of Astable, monostable and Bistable transistorised multivibrators, RS, CK-RS, D, JK, JKMS and T Flip Flops (Logic diagram, Truth table, construction & working), Concept of edge trigger Flip-Flop, Concept of preset & clear terminal.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Counters and Shift registers:</b> Asynchronous & synchronous Counter, Up-down counters (up to 4-bits), modified asynchronous counter (Mod -7 ,Mod10, and Mod-13). Types of shift registers, SISO, SIPO, PISO & PIPO, IC version of Mod -10 shift registers (Construction & working), IC version of shift register – 7495, Application of shift register. Ring counter, Johnson's counter.	04 04 03 04	15

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

5	Apr- May	<b>Unit V</b>	<b>Combinational logic circuit:</b> Encoder: Binary to BCD, Decimal to BCD, IC 74147, Decoder: 2 to 4 line, BCD to decimal, BCD to 7 segment, IC 7447, Multiplexer: 4X1, 8X1, De multiplexer: 1X4, 1X8, (Definition, construction, operation and application of above)	05 02 03 05	15
6	Apr- May	<b>Unit VI</b>	<b>Semiconductor Memories:</b> Concept of memory, primary and secondary memory, classification of memories, volatile and non volatile memories, memory Hierarchy, semiconductor memory: RAM, ROM, PROM, EPROM, EEPROM, flash memory.	04 02 09	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**  
**Semester:- III<sup>rd</sup>**  
**Paper:- Electronics Devices and Circuits**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	Unit. I	<b>Hybrid-parameters &amp; Cascaded amplifiers:</b> Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers, Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,	07 02 06	15
2	Aug-Sept	Unit II	<b>Power Amplifier:</b> Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.	05 05 05	15
3	Sept	Unit III	<b>Feedback amplifiers and Oscillators:</b> Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only), concept of oscillator,basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator	03 03 02 07	15
4	Oct	Unit IV	<b>Operational amplifier and applications:</b> Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp output impedance, Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.	01 03 1 1	15

5	Nov.	<b>Unit V</b>	<b>Advance applications of Op- Amp:</b> Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).	04 04 07	15
6	Nov- Dec	<b>Unit VI</b>	<b>A/D and D/A converter:</b> Need of A/D and D/A converter. D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification. A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter	03 03 02 07	15

Head of Department

Class:-B.Sc. II<sup>nd</sup> Year

Semester- IV<sup>th</sup>

B.Sc. II<sup>nd</sup> Year

Paper:- Communication Electronics and Microprocessor 8085

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan-Feb	Unit I	<b>Modulation and Demodulation:</b> Need for modulation, AM theory, Power relation, Theory of FM , Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector. Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.	03 03 03 02 04	15
2	Feb-Mar	Unit II	<b>Fiber Optic Communication :</b> Introduction ,advantages of OFC , Types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor . Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.	02 03 04 03 03	15
3	Mar	Unit III	<b>Pulse Modulation and Digital Communication:</b> Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise ) , Application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .	08 07	15
4	Mar-Apr	Unit IV	<b>Architecture and timings of 8085:</b> Evolution of microprocessor, microcomputer (Block diagram with function of each block), architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.	03 07 05	15
5	Apr-May	Unit V	<b>Instruction and programming of 8085:</b> Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair). Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.	04 02 02 07	15

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester:- IV**

**Paper: :- Communication Electronics and Microprocessor 8085**

<b>Sr. No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Interfacing:</b> Basic interfacing concept, memory mapped I/O and I/O mapped I/O Schemes, data transfer schemes. 8255PPI: block diagram, function of each block, Functional pin diagram, , function of each pin, operating modes of 8255PPI, control word format in I/O and BSR mode, illustrative example.	03    02       10	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-V<sup>th</sup>**  
**Paper:-Measuring Instruments**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<b>Basic Instrumentation:</b> Block diagram of generalized instrumentation system, Concept of transducers (Primary and secondary, active and passive, analog and digital). Resistive transducer potentiometer, Inductive transducer - LVDT, capacitive transducer (by changing distance), measurement of displacement using capacitive transducer (By changing dielectric).	05 05 05	15
2	Aug-Sept	<b>Unit II</b>	<b>Measurement of Temperature:</b> Thermocouple, Thermopile, Thermister, RTD, Total Radiation Pyrometer, IC DS 1621 ,IC LM34 , IC LM35 , Infrared Pyrometer,	06 03 04 02	15
3	Sept	<b>Unit III</b>	<b>Timer and PLL: IC 555 timer:</b> Block diagram and function of each block, application of 555 timer as astable, bistable and monostable multivibrator (construction, working and expression for time period). PLL Block diagram and function of each block, concept of capture range, pull in time, lock in range, electrical characteristics, applications of PLL as FM demodulator, AM detector and frequency synthesizer	07 04 04	15
4	Oct	<b>Unit IV</b>	<b>Display, digital Instrument and recorder:</b> Seven segment, 14 segment, dot matrix, 16x2 LCD display, advantage and disadvantage, Digital instrument: Digital frequency meter, Digital voltmeter (Ramp type), Digital capacitance meter (Block diagram and function of each block) . Recorder: Classification, necessity of recorder, XY recorder, magnetic tape recorder.	04 06 05	15
5	Nov.	<b>Unit V</b>	<b>Sensors and Actuators:</b> Sensors: Definition, Methods of fabrication of Sensors, Types of sensors (Mechanical, Thermal, Optical, magnetic, chemical) Actuators: Definition, Working principles of Electromechanical, Electro thermal, Electro-optical and Electrochemical Actuators.	08 07	15

6	Nov.	<b>Unit VI</b>	<b>Biomedical electronics:</b> Introduction, Type of electrode, EEG, EMG, ECG- block diagram and function of each block, X ray machine, instantaneous heart rate meter- systolic and diastolic blood pressure meter, EAR oximeter, pulse Oximeter, range gated pulse Doppler blood flow meter, Laser Doppler blood flow meter.	06  03  07	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-VI<sup>th</sup>**  
**Paper:- Advanced Microprocessor and Microprocessor**

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>8086 Architecture:</b> Block diagram of 8086 microprocessor, BIU and EU, operating modes of 8086, register of 8086-G.P.R, pointer and index register, segment register, concept of segmented memory, instruction pointer, status flag, pin diagram of 8086 microprocessor, physical and effective address.	07  08	15
2	Feb- Mar	<b>Unit II</b>	<b>Instructions and programming of 8086 Instructions:</b> MOV, PUSH, POP, LEA, LDS, LES, Arithmetic & Logic Instructions. Addressing mode, 8086 instruction, Bus cycle, Programming: programs of data transfer, addition, subtraction, division, multiplication using various addressing mode.	03  04  08	15
3	Mar	<b>Unit III</b>	<b>8051 Microcontroller Architecture :</b> Microcontroller Introduction, Difference between Microprocessor and Microcontroller, block diagram of microcontroller, CPU, registers, flags, PSW, PC, Data Pointer, SFR, SP, Internal RAM/ROM, External memory, I/O ports, counter & timers, interrupts.	05  05  05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Instruction set of 8051 and Programming:</b> Addressing mode, Instruction set: Data transfer, arithmetic, logical operation, JUMP, Loop and CALL instructions.  Assembly language programming examples: simple data transfer, arithmetic, logical and single bit.	08    07	15
5	Apr- May	<b>Unit V</b>	<b>8051 Interfacing &amp; Application:</b> Basics of serial communication, interfacing with RS-232C, SCON and PCON registers, interfacing a DAC / ADC and waveform generation, interfacing to the 8255, interfacing LED, power reduction mode.	05  05  05	15

**Class:-B.Sc. III<sup>rd</sup> Year**

**Semester-VI<sup>th</sup>**

**Paper:- Advanced Microprocessor and Microprocessor**

<b>Sr. No.</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Advance microcontroller:</b> Introduction to AVR, Arithmetic and logic Unit, program and data memories, downloadable flash program memory, SRAM data memory, general purpose register file, I/O register, EEPROM data memory, peripherals, Timers/ Counters.	04 02 05 04	15

Head of Department

Amrut Sevabhavi Sanstha, Parbhani.  
**Late Ku. Durga K. Banmeru Science College, Lonar Dist-Buldhana.**

# **Department of Electronics**

**Teaching Plan 2021-22**

**Class:-B.Sc. I<sup>st</sup>Year**  
**Semester:- I<sup>st</sup>**  
**Paper:- Basic Of Electronics(CBCS)**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<p><b>Passive component and Network Theorems</b></p> <p>Introduction to Resistors, Capacitors, Inductors and Transformers,</p> <p>Concept of ideal dc voltage and current source,</p> <p>KVL, KCL,</p> <p>Thevenin's, Norton's, maximum power transfer, Millman's theorem (statement, proof, simple numerical application for dc only).</p>	04  02  02 07	15
2	Aug-Sept	<b>Unit II</b>	<p><b>Measuring Instruments</b></p> <p>Principles of voltmeter, ammeter, ohmmeter, Multirange DC voltmeter, ohm per volt rating, loading effect, Multirange DC Ammeter, Series &amp; shunt type ohmmeter, Multimeter (uses &amp; drawback). CRO Block diagram &amp; explanation, CRT construction &amp; working, uses of CRO (measurement of frequency , amplitude &amp; phase.)</p>	03  04 04 04	15
3	Sept	<b>Unit III</b>	<p><b>Semiconductor Diode and Regulated power supply:</b></p> <p>Operation and characteristics of PN junction diode, Avalanche and Zener breakdown mechanism, Half wave and full wave rectifiers (ripple factor, efficiency, PIV ratings), C, L and p filters, Concept of unregulated and regulated power supply, Zener diode voltage regulator, Three terminal IC regulator.</p>	04 03 03 02 03	15

**Class:-B.Sc. I<sup>st</sup>Year**

4	Oct	<b>Unit IV</b>	<b>Bipolar Transistors:</b> NPN and PNP transistor (construction and working) CB, CE & CC configuration, leakage currents, Input and output characteristics of CE mode, relation between $\alpha$ and $\beta$ Load line and operating point, Amplification action of CE amplifier, biasing and stability, Self and fixed bias circuit.	05 03 02 02 04	15
5	Nov.	<b>Unit V</b>	<b>Switching and Optoelectronic devices :</b> Construction, working and characteristics of FET, MOSFET, UJT, SCR, relation of FET parameters, Construction, working & characteristics of LDR, LED, photodiode, photovoltaic cell( Solar cell).	08 02 05	15
6	Dec.	<b>Unit VI</b>	<b>Integrated Circuits:</b> Introduction to IC technology, advantages and disadvantages, Classification of ICs, Basic steps in fabrication of monolithic ICs, Fabrication of diode, resistor & transistor. Scale of integration upto V2LSI', Basic concept of Embedded systems.	03 02 02 03 02 03	15

Head of Department

Class:-B.Sc. I<sup>st</sup>Year

Semester:- II<sup>nd</sup>

Paper:- Digital Electronics(CBCS)

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	Unit. I	<b>Binary Arithmetic &amp; Logic gates :</b> Binary, Octal & Hexadecimal number system and their interconversion, Binary arithmetic (addition and subtraction using 1's & 2's compliment), multiplication & division. Binary codes : 8421 BCD, Excess-3 & Gray code. NOT, OR, AND, NAND, NOR gates (definition and truth table). EXNOR & EXOR gates, Half adder, full adder, 4 bit binary full adder.	07 01 05 02	15
2	Feb- Mar	Unit II	<b>Boolean Algebra &amp; Logic families:</b> Boolean laws, De-morgans theorem, Simplification of Boolean equations using Boolean algebra, Fundamental products & sum terms, K-map (K-map upto 4 variable). Classification of logic families, characteristics (Fan-in, Fanout, Noise immunity, Propagation delay, Power dissipation), DTL, TTL & CMOS logic.	02 07 03 03	15
3	Mar	Unit III	<b>Multivibrators and Flip Flops:</b> Construction & working of Astable, monostable and Bistable transistorised multivibrators, RS, CK-RS, D, JK, JKMS and T Flip Flops (Logic diagram, Truth table, construction & working), Concept of edge trigger Flip-Flop, Concept of preset & clear terminal.	05 05 05	15
4	Mar- Apr	Unit IV	<b>Counters and Shift registers:</b> Asynchronous & synchronous Counter, Up-down counters (up to 4-bits), modified asynchronous counter (Mod -7 ,Mod10, and Mod-13). Types of shift registers, SISO, SIPO, PISO & PIPO, IC version of Mod -10 shift registers (Construction & working), IC version of shift register – 7495, Application of shift register. Ring counter, Johnson's counter.	04 03 04 04	15

**Class:-B.Sc. I<sup>st</sup>Year**

**Semester:- II<sup>nd</sup>**

5	Apr- May	<b>Unit V</b>	<b>Combinational logic circuit:</b> Encoder: Binary to BCD, Decimal to BCD, IC 74147, Decoder: 2 to 4 line, BCD to decimal, BCD to 7 segment, IC 7447, Multiplexer: 4X1, 8X1, De multiplexer: 1X4, 1X8, (Definition, construction, operation and application of above)	05 02 03 05	15
6	Apr- May	<b>Unit VI</b>	<b>Semiconductor Memories:</b> Concept of memory, primary and secondary memory, classification of memories, volatile and non volatile memories, memory Hierarchy, semiconductor memory: RAM, ROM, PROM, EPROM, EEPROM, flash memory.	04 02 02	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**  
**Semester:- III<sup>rd</sup>**  
**Paper:- Electronics Devices and Circuits**

Sr. No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	Unit. I	<b>Hybrid-parameters &amp; Cascaded amplifiers:</b> Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers, Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,	07 02 06	15
2	Aug-Sept	Unit II	<b>Power Amplifier:</b> Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.	05 05 05	15
3	Sept	Unit III	<b>Feedback amplifiers and Oscillators:</b> Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only), concept of oscillator,basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator	03 03 02 07	15
4	Oct	Unit IV	<b>Operational amplifier and applications:</b> Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp output impedance, Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.	01 03 1 1	15

5	Nov.	<b>Unit V</b>	<b>Advance applications of Op- Amp:</b> Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).	04 04 07	15
6	Nov- Dec	<b>Unit VI</b>	<b>A/D and D/A converter:</b> Need of A/D and D/A converter. D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification. A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter	02 04 02 07	15

Head of Department

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester- IV<sup>th</sup>**

**B.Sc. II<sup>nd</sup> Year**

**Paper:- Communication Electronics and Microprocessor 8085**

<b>Sr.No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
1	Jan- Feb	<b>Unit. I</b>	<b>Modulation and Demodulation:</b> Need for modulation, AM theory, Power relation, Theory of FM , Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector. Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.	03 03 03 02 04	15
2	Feb- Mar	<b>Unit II</b>	<b>Fiber Optic Communication :</b> Introduction ,advantages of OFC , Types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor . Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.	02 03 04 03 03	15
3	Mar	<b>Unit III</b>	<b>Pulse Modulation and Digital Communication:</b> Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise ) , Application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .	08 07	15
4	Mar- Apr	<b>Unit IV</b>	<b>Architecture and timings of 8085:</b> Evolution of microprocessor, microcomputer (Block diagram with function of each block), architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.	03 07 05	15
5	Apr- May	<b>Unit V</b>	<b>Instruction and programming of 8085:</b> Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair). Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.	04 02 02 07	15

**Class:-B.Sc. II<sup>nd</sup> Year**

**Semester:- IV**

**Paper: :- Communication Electronics and Microprocessor 8085**

<b>Sr. No</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Interfacing:</b> Basic interfacing concept, memory mapped I/O and I/O mapped I/O Schemes, data transfer schemes. 8255PPI: block diagram, function of each block, Functional pin diagram, , function of each pin, operating modes of 8255PPI, control word format in I/O and BSR mode, illustrative example.	02    03       10	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-V<sup>th</sup>**  
**Paper:-Measuring Instruments**

Sr.No	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Aug	<b>Unit. I</b>	<b>Basic Instrumentation:</b> Block diagram of generalized instrumentation system, Concept of transducers (Primary and secondary, active and passive, analog and digital). Resistive transducer potentiometer, Inductive transducer - LVDT, capacitive transducer (by changing distance), measurement of displacement using capacitive transducer (By changing dielectric).	05 05 05	15
2	Aug-Sept	<b>Unit II</b>	<b>Measurement of Temperature:</b> Thermocouple, Thermopile, Thermister, RTD, Total Radiation Pyrometer, IC DS 1621 ,IC LM34 , IC LM35 , Infrared Pyrometer,	06 03 04 02	15
3	Sept	<b>Unit III</b>	<b>Timer and PLL: IC 555 timer:</b> Block diagram and function of each block, application of 555 timer as astable, bistable and monostable multivibrator (construction, working and expression for time period). PLL Block diagram and function of each block, concept of capture range, pull in time, lock in range, electrical characteristics, applications of PLL as FM demodulator, AM detector and frequency synthesizer	07 04 04	15
4	Oct	<b>Unit IV</b>	<b>Display, digital Instrument and recorder:</b> Seven segment, 14 segment, dot matrix, 16x2 LCD display, advantage and disadvantage, Digital instrument: Digital frequency meter, Digital voltmeter (Ramp type), Digital capacitance meter (Block diagram and function of each block) . Recorder: Classification, necessity of recorder, XY recorder, magnetic tape recorder.	03 07 05	15
5	Nov.	<b>Unit V</b>	<b>Sensors and Actuators:</b> Sensors: Definition, Methods of fabrication of Sensors, Types of sensors (Mechanical, Thermal, Optical, magnetic, chemical) Actuators: Definition, Working principles of Electromechanical, Electro thermal, Electro-optical and Electrochemical Actuators.	08 07	15

6	Nov.	<b>Unit VI</b>	<b>Biomedical electronics:</b> Introduction, Type of electrode, EEG, EMG, ECG- block diagram and function of each block, X ray machine, instantaneous heart rate meter- systolic and diastolic blood pressure meter, EAR oximeter, pulse Oximeter, range gated pulse Doppler blood flow meter, Laser Doppler blood flow meter.	06  03  07	15

Head of Department

**Class:-B.Sc. III<sup>rd</sup> Year**  
**Semester-VI<sup>th</sup>**  
**Paper:- Advanced Microprocessor and Microprocessor**

Sr. No.	Month	Unit	Name of Unit & Topics	Required Lect.	Total Lect.
1	Jan- Feb	<b>Unit. I</b>	<b>8086 Architecture:</b> Block diagram of 8086 microprocessor, BIU and EU, operating modes of 8086, register of 8086-G.P.R, pointer and index register, segment register, concept of segmented memory, instruction pointer, status flag, pin diagram of 8086 microprocessor, physical and effective address.	07 08	15
2	Feb- Mar	<b>Unit II</b>	<b>Instructions and programming of 8086 Instructions:</b> MOV, PUSH, POP, LEA, LDS, LES, Arithmetic & Logic Instructions. Addressing mode, 8086 instruction, Bus cycle, Programming: programs of data transfer, addition, subtraction, division, multiplication using various addressing mode.	04 03 08	15
3	Mar	<b>Unit III</b>	<b>8051 Microcontroller Architecture :</b> Microcontroller Introduction, Difference between Microprocessor and Microcontroller, block diagram of microcontroller, CPU, registers, flags, PSW, PC, Data Pointer, SFR, SP, Internal RAM/ROM, External memory, I/O ports, counter & timers, interrupts.	05 05 05	15
4	Mar- Apr	<b>Unit IV</b>	<b>Instruction set of 8051 and Programming:</b> Addressing mode, Instruction set: Data transfer, arithmetic, logical operation, JUMP, Loop and CALL instructions. Assembly language programming examples: simple data transfer, arithmetic, logical and single bit.	08 07	15
5	Apr- May	<b>Unit V</b>	<b>8051 Interfacing &amp; Application:</b> Basics of serial communication, interfacing with RS-232C, SCON and PCON registers, interfacing a DAC / ADC and waveform generation, interfacing to the 8255, interfacing LED, power reduction mode.	05 05 05	15

**Class:-B.Sc. III<sup>rd</sup> Year**

**Semester-VI<sup>th</sup>**

**Paper:- Advanced Microprocessor and Microprocessor**

<b>Sr. No.</b>	<b>Month</b>	<b>Unit</b>	<b>Name of Unit &amp; Topics</b>	<b>Required Lect.</b>	<b>Total Lect.</b>
6	May	<b>Unit. VI</b>	<b>Advance microcontroller:</b> Introduction to AVR, Arithmetic and logic Unit, program and data memories, downloadable flash program memory, SRAM data memory, general purpose register file, I/O register, EEPROM data memory, peripherals, Timers/ Counters.	04 02 05 04	15

Head of Department